

REMARKS

Favorable reconsideration of this Application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-19 and 23-30 are pending in the present Application. Claims 1, 4, 7, 17, and 19 are amended to address cosmetic matters of form. No new matter has been added.

By way of summary, the Official Action presents the following issues: Claims 1, 4, 7 and 17 have been objected to based upon informalities; Claims 1-14, 16 and 18-30 stand rejected under 35 U.S.C. §102 as being unpatentable over Greenstein et al. (U.S. Patent 6,131,016, hereinafter Greenstein); Claim 15 stands rejected under 35 U.S.C. §103 as being unpatentable over Greenstein and in view of Takai et al. (U.S. Patent 5,561,673, hereinafter Takai); and Claim 17 stand rejected under 35 U.S.C. §103 as being unpatentable over Greenstein.

OBJECTIONS TO THE CLAIMS

In response to the objection to Claims 1, 4, 7 and 17 outlined in paragraph 2 of the Official Action, Applicant has amended these claims to correct typographical errors.

Accordingly, Applicant respectfully requests the objection to these claims be withdrawn.

REJECTION UNDER 35 U.S.C. § 102

The Official Action has rejected Claims 1-14, 16 and 18-30 under 35 U.S.C. §102 as being unpatentable over Greenstein. The Official Action contends that Greenstein describes all of the Applicant's claimed features. Applicant respectfully traverses the rejection.

Applicant's amended Claim 1 recites, *inter alia*, a transmission diversity device, including:

phase comparison and adjustment means for comparing
phases of signals received at the antenna elements and for

adjusting phases of signals transmitted by the antenna elements according to the result of the comparison,

wherein the transmission diversity device is designed for a multicarrier transmission and individually compares the phase of each frequency subcarrier of the multicarrier transmission of each antenna element with a phase of a corresponding frequency subcarrier of at least one other antenna element and adjusts it subsequently for a transmission. (emphasis added)

Greenstein describes a system for transmitting multi-carrier OFDM signals, including pilot tones. As shown in Fig. 2B, the downlink receiver, or terminal, performs differential phase detection of successive received pilot tones. In operation, the receiving terminal compares the strength of successive received pilot tones, and, determines which of the channels, that is the air channels associated with the respective transmit antenna, is currently carrying the stronger pilot tone. The pilot tone and the non-pilot tones are sent by two antennas of the base station at the same time within the same tone cluster of an OFDM symbol. A terminal receives the cluster tones including the pilot tones and the data tones, analyzes the pilot tones and transmits back to the base station a feedback signal comprising the results of the pilot tones analysis. This feedback signal is then used by the base station to adjust the data signals, that is the non-pilot tones within the tone cluster.¹

As can be appreciated from the above description of Greenstein, pilot tones are received at a single antenna (for example antenna 17 in Figure 2a and antenna 21 in Figure 2b) and are analyzed in order to detect relationships between pilot tones.² In this configuration, a single receive antenna (antenna 17 or antenna 21) is utilized.

Conversely, in an exemplary aspect of the Applicant's claimed advancements, a plurality of receive antennas are utilized to analyze the phase of each frequency subcarrier received in the plurality of antenna elements. In other words, the currently amended claims compare a phase of each frequency subcarrier of each antenna element with a phase of a

¹ See Greenstein at column 3, lines 1-23.

² See Greenstein at column 3, lines 4-22.

corresponding frequency subcarrier of at least one other antenna element as recited in the amended claims.

As the pending independent claims recite substantially similar limitations to that discussed above, Applicant respectfully requests that the rejection of Claims 1-14, 16 and 18-30 under 35 U.S.C. §102 be withdrawn.

REJECTIONS UNDER 35 U.S.C. §103

The Official Action has rejected Claim 15 under 35 U.S.C. §103 as being unpatentable over Greenstein in view of Takai. The Official Action contends that Greenstein describes all of the Applicant's claimed elements with the exception of one antenna element not being used if a signal is an amplitude below a predetermined threshold is received from the antenna element. However, the Official Action cites Takai as describing this more detailed aspect of the Applicant's claimed advancements, and states that it would have been obvious, to one of ordinary skill in the art at the time the invention was made, to combine the cited references for arriving at the Applicant's claims. Applicant respectfully traverses the rejection.

As noted above, Greenstein does not describe all of the features of the Applicant's amended claims. Likewise, as Takai does not remedy these deficiencies alone or in combination with Greenstein, Applicant respectfully submits that a *prima facie* case of obviousness has not been presented.

Accordingly, Applicant respectfully requests that the rejection of Claim 15 under 35 U.S.C. §103 be withdrawn.

The Official Action has rejected Claim 17 under 35 U.S.C. §103 as being unpatentable over Greenstein. The Official Action contends that Greenstein discloses or

suggests all of the Applicant's claimed features. Applicant respectfully traverses the rejection.

As noted above, Greenstein does not disclose all of the features of the Applicant's amended claims. Accordingly, Applicant respectfully submits that a *prima facie* case of obviousness has not been presented. Accordingly, Applicant respectfully requests that the rejection of Claim 17 under 35 U.S.C. §103 be withdrawn.


CONCLUSION

Consequently, in view of the foregoing amendment and remarks, it is respectfully submitted that the present Application, including Claims 1-19 and 23-30, is patently distinguished over the prior art, in condition for allowance, and such action is respectfully requested at an early date.

Respectfully submitted,
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